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1888.

ILLUSTRATED CATALOGUE

— OF —

CONTRACTORS' PLANT



MANUFACTURED BY

M. BEATTY & SONS

WELLAND, ONT.,

CANADA.

M. BEATTY & SONS,

MANUFACTURERS OF

STEAM DREDGES,

STEAM DERRICKS, STEAM SHOVELS,

RAILROAD PILE DRIVERS,

HOISTING ENGINES,

HORSE-POWER HOISTERS,

HOISTING MACHINES, STONE DERRICK IRONS,

CENTRIFUGAL PUMPS,

AND OTHER MACHINERY FOR CONTRACTORS' USE.

WELLAND, ONT.,

CANADA.

1888.



Standard Steam Dredge.

Steam Dredge.

THE cut on page 2 represents our Improved Standard Dredges, which we make in several sizes, with Single or Double Cylinder Engines. The Hoisting and other Drums are made to be driven by Solid Clutches or Friction Clutches, as desired. The Swinging Gear is driven from Main Engine or by Independent Swinging Engines as preferred. The Anchor Hoisting Machinery is of the latest pattern and driven by Friction Clutches; it is so arranged that not only can the anchors be raised by steam but the Dredge can also be pinned up on the Bow Anchors by steam, which saves much time over the old way of swinging the Crane first to one side and then to the other. The Stern Anchor is of the Trailing type and is left on the bottom while moving and pinning up, thus keeping the Dredge in place until the Bow Anchors are dropped, when it is raised and brought to its place and dropped. There is also a Hand-hoisting Attachment on each Anchor.

The Crane is made extra strong with all the latest improvements. Boilers are of the Return Flue style and of large capacity, made of best steel plates. Racks and Pinions are of steel. Chains are Edges' Best Crane; and all castings are made of best brands of iron carefully selected and mixed to give the greatest strength, and in fact all materials and workmanship are of the best quality.

Steam Derrick.

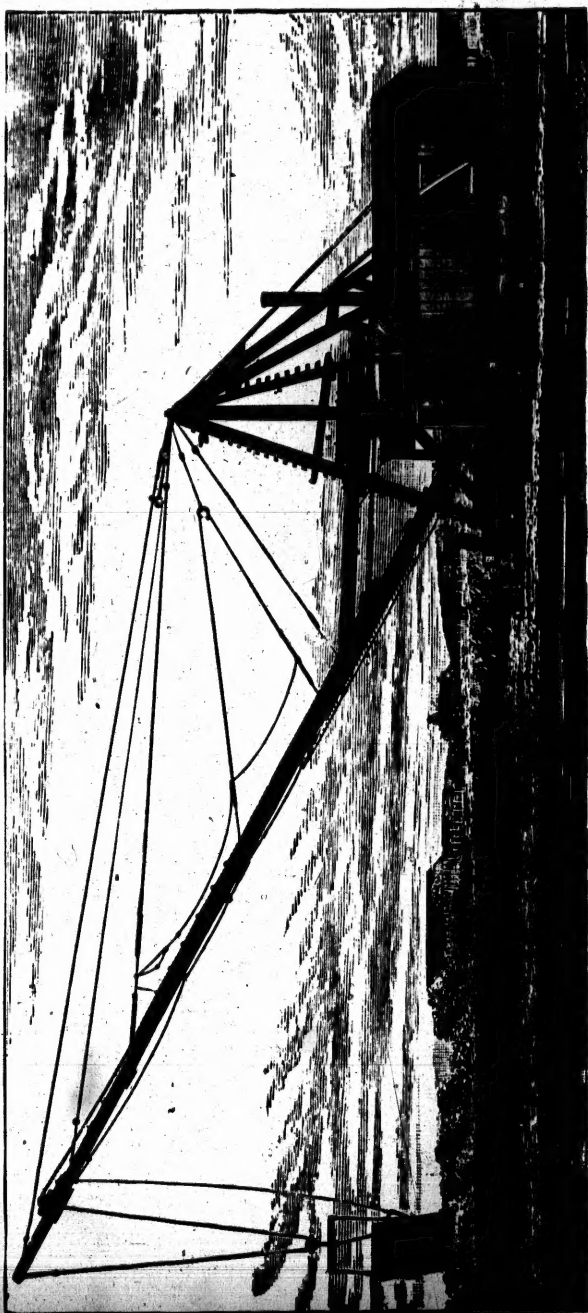
THE cut on page 4 represents our Standard Steam Derricks. They can be used, either with Dump Box or Clam Shell Bucket, for taking the earth from a Dredge; also, for hoisting rock and swinging it back and depositing it from 50 to 200 feet from the place it is taken out of, in cuts on either Railways, Canals or Quarries. We make these in several sizes with Double Cylinder Engines—Drums driven by either Solid Clutches or Friction Clutches.

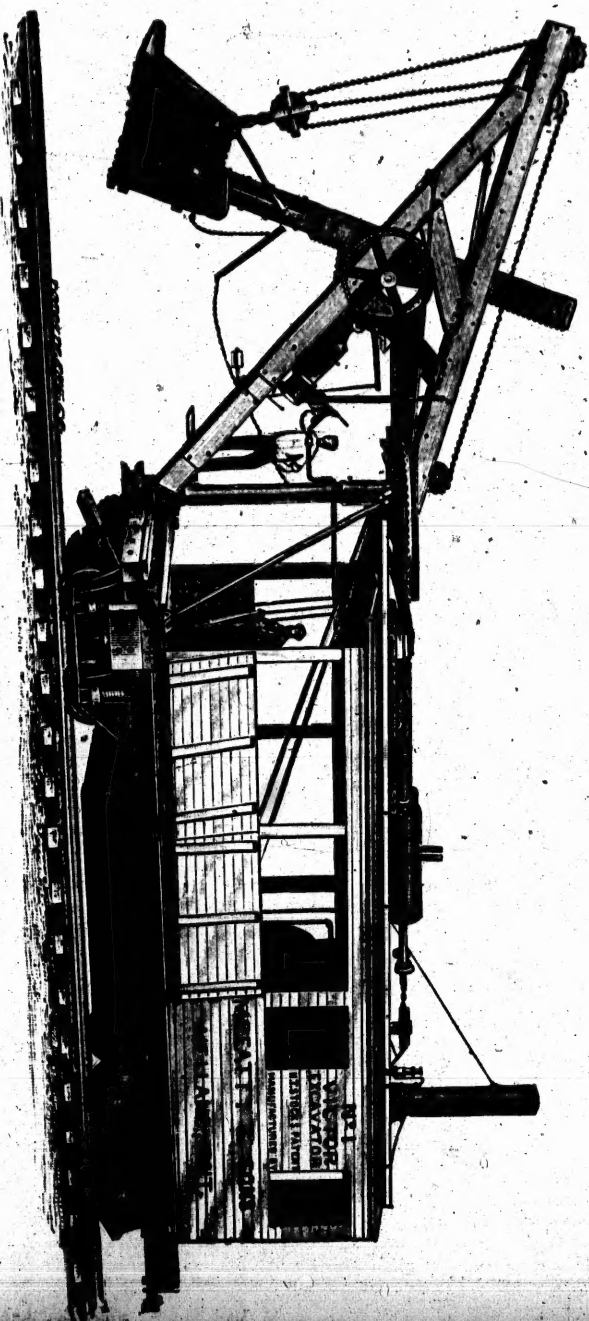
The Boiler is of the locomotive type, made of best steel plates. The whole is mounted on heavy Oak Frame with extra strong wheels and axles and connected by endless chain and gearing to the engine so as to be moved by steam. Castings are made of best brands of iron, carefully selected and mixed to give the greatest strength, and all materials and workmanship are of best quality.

Stock's No. 1 Victor Excavator.

(We have Secured the Sole Right to Build in Canada.)

Standard Steam Derrick.





Stock's No. 1 Victor Excavator.

(We have Secured the Sole Right to Build in Canada.)

Victor Excavator.

THE cut on page 5 represents H. T. Stock's Patent Railroad Excavator, known as the Victor Excavator, which secured the Gold Medal (the highest premium) at the National Exposition of Railway Appliances, held in Chicago, June, 1883. It was there subjected to a thorough examination by a careful and competent committee of expert railroad men, who were selected especially for the Exhibition. The Car of Excavator is 31 feet long, 10 feet wide, and mounted on 8 wheels. The frame of car and house is made of Iron Channels and Beams, and is put together so as to make a very strong and durable machine. The main Engine is horizontal, with two cylinders, has reversing gear, and is only used for hoisting the dipper and moving car. The Hoisting Drum is driven by a Steam Friction Clutch that can be thrown in or out with engine running at full speed, or with full power on in digging; it is operated by a steam cylinder which makes it much easier for the runner and enables him to operate faster.

The swinging is done by two independent Steam Cylinders connected direct to the Turntable chains without the intervention of any shafts or gears, making it the simplest and quickest arrangement in use. The Forcing Engines on Crane have two cylinders and a very simple reversing attachment—with them the dipper can be run out or in as may be required, either in digging or in getting into the right position over a car to dump load.

The Mast is of a new pattern, being a hollow steel casting so the hoisting chain can pass in at the top, down through it and out at the bottom, which obviates the necessity of having a hole through the side for chain to pass out of, thus making a mast that cannot break, as the cast-iron ones with hole in the side that are used by other makers do.

The Crane and Turntable are of iron substantially fastened together and braced so as to make it extra strong. The Crane is arranged so that it can be lowered down level on top in a few minutes; this improvement, with the Adjustable Jack Arms that can be disconnected in a few minutes, enables the Victor Excavator to be made ready for moving any where that an ordinary passenger car will go—through tunnels or under bridges—and upon arriving at destination can be got ready for work in the same time it took to get ready for moving.

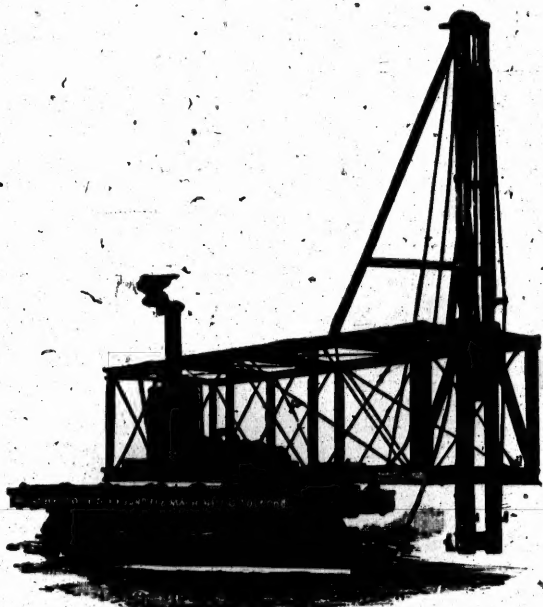
We use Steel Racks and Pinions on the Dipper Handle; Edges' Best Best Crane Chains for hoisting and swinging.

The Boiler is large and of ample capacity to steam easy, made of best Steel Plates.

There is a large Water Tank under the car and out of the way, that holds enough to supply the boiler for half a day.

With all the improvements embodied in this machine it is considered the best Excavator made, and it will do the largest amount of work at the least expense.

We have secured the sole right to manufacture the Victor Excavator in Canada.



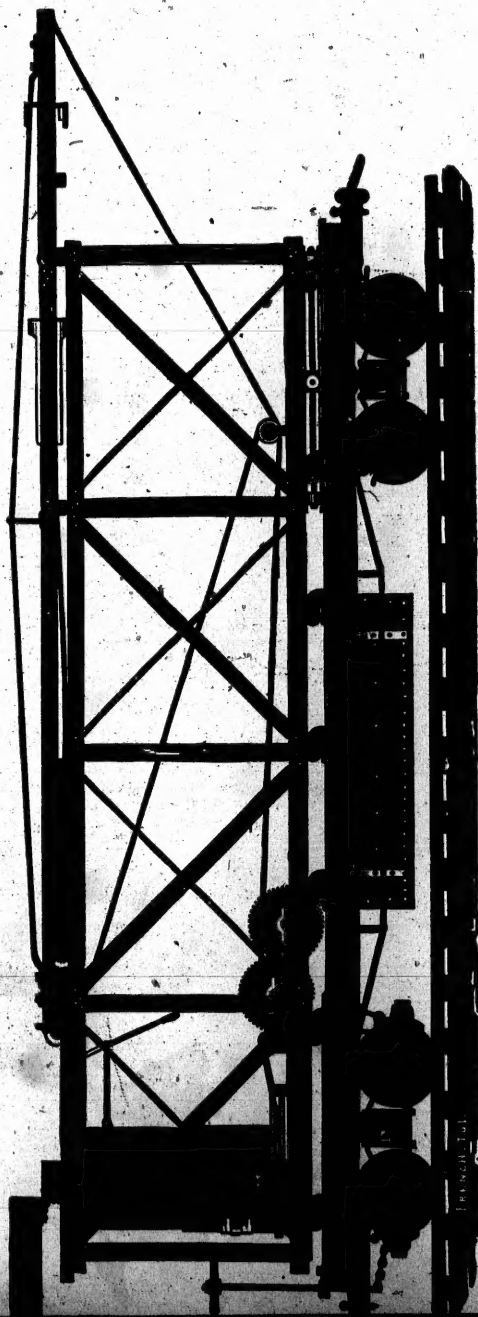
Stock's Railroad Pile Driver.

(We have Secured the Sole Right to Build in Canada.)

THE above cut represents Stock's Improved Railroad Pile Driver in working position, with 16 ft. extension, and Turntable at both ends, which allows of its being used on either end of car. It will drive piles 16 ft. ahead of track, 16 ft. on either side of centre of track, or at any point within 16 ft. radius. It has our Double Cylinder Hoisting Engine with Patent Friction Drum for Hoisting the Hammer, and Spool on end of drum shaft for raising the pile. The hammer line is made fast to the hammer and goes with it, which enables it to strike fully three blows for one that can be done where the old style of a clutch drum and nippers are used, and also doing away with an expensive and dangerous device. The hammer drum is provided with a Ratchet and Pawl for holding the hammer in any position required while the pile is being raised and got into place for receiving the blow.

The machinery is placed upon a strong Bridge Frame Work of Channel Iron, and is moved from centre to either end upon fixed rollers where it can be turned to any position upon turntable and clamped to car while being used. The Leaders can be lowered into position shown on page 8, and being balanced by placing the hammer about 5 ft. from lower end of Leaders; can be easily handled by two men and done in a few minutes, and can then be run anywhere in a freight train. There is a Water Tank under the car which holds a day's supply of water.

We can also make them to propel themselves so that they can be moved without having a locomotive in attendance.



Stock's Railroad Pile Driver in Transit.

This cut represents the Pile Driver with Leaders and Smoke Stack lowered down and frame in position for moving on the road in freight train — the change can be made in a few minutes by two men.

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Hoisting Engines.

OUR Improved Patent Friction Drum Hoisting Engines, as represented on the following pages, are of the latest design, in which are embraced all the improvements that experience has proved to be the best for this class of machinery. They are simple in design and construction and are properly proportioned throughout to secure the best results. They are economical, durable and effective, and will be found to give satisfaction to every one.

Our Improved Patent Friction Drums are a decided improvement and far superior to the old style Clutch Drum, and also to many other Friction Drums. They are quick in operation, easy to handle on all kinds of work, and will do a larger amount of it, and in a more satisfactory manner. They will stand a large amount of hard work without perceptible wear, and therefore will not require continual repairing, which is not only expensive but causes delay and annoyance.

The friction is of the cone style, and is composed of the hardest kind of wood, well seasoned and placed endwise of the grain to the wear, which engages with a smooth iron surface and will last for years if properly taken care of. The drum runs loose on shaft and is thrown in gear by a slight end motion which is effected by a lever and screw, the power of this is such that a very slight pressure will hold the drum in gear against any load the engine can hoist. We make all drums plain unless ordered grooved.

FOR PILE DRIVING.

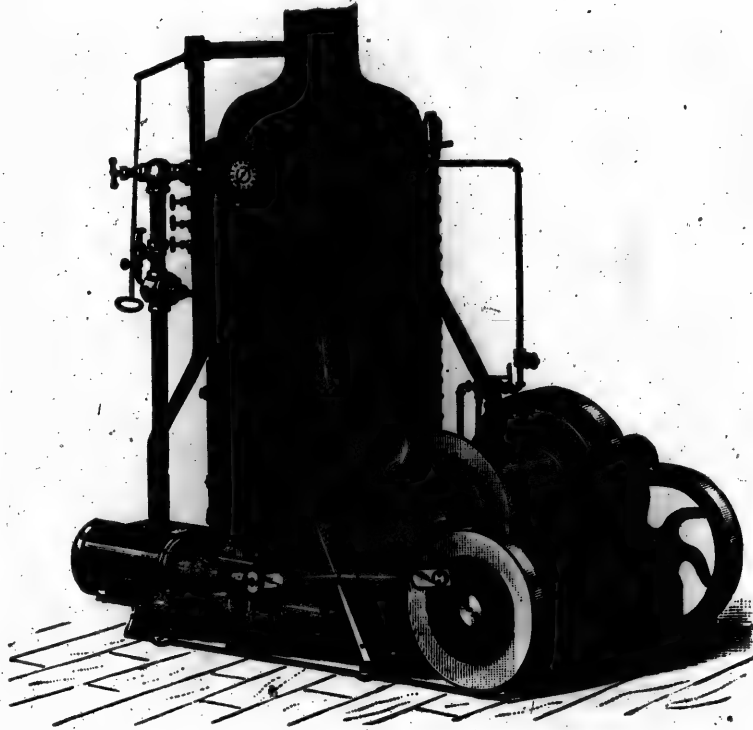
These drums are well adapted, for by their use at least fifty per cent. more piles can be driven than by any Clutch Drum. The rope being made fast to the hammer so that when operating the hammer is raised as high as required, the drum released when the hammer drops, overhauling the rope off the drum, which runs so free that the full weight of blow is delivered on the pile. It will be seen that blows from any height can be given without a moment's delay, thus driving light or heavy as required, while with the Clutch Drum it is necessary to use nippers and a man to attend them to release the hammer at the right place.

THE ENGINES

Are of the horizontal type and all their parts are fitted for rapidity of action, durability, &c. The Bed Plates and Drum Stands are heavy and substantial, and of form to give the most strength. They are fitted on planed surfaces and fastened by turned bolts in reamed holes, so that the parts cannot get loose and move out of place. Also, the engines can be taken apart and put together again in proper shape by any one with ordinary intelligence. The Cylinders are fitted with plain D Slide Valves, which are the best for such work, and they are so proportioned with large steam and exhaust ports that they will give the best and most effective distribution of steam, and are especially designed for high speed. The Cylinders are covered with wood and fitted with Russia Iron casings. The cylinder drainage cocks are connected so as to be all opened and shut simultaneously by means of a lever that is placed within easy reach of the Runner. The piston and valve rods, crank and cross-head pins and crank shaft are of steel, connecting rod boxes are of best bronze, journal bearings are lined with best anti-friction metal, the crank wheel is counterbalanced to prevent vibration and balance, so far as possible, the reciprocating parts. The Drums are cast in one piece and are made plain so that either hemp or wire rope can be used. We also make them of different sizes from those given in tables when required. The Drum Shafts are large so as to give ample strength for any work they may have to do. The Gearing is of best shape for strength and wear, running true and smooth. A Winch Head is placed on the end of drum shaft of each engine. The engines are provided with Throttle and Stop Valve, Cylinder Lubricators, Oil Cups, &c.

THE BOILERS are large and steam freely with ordinary fuel; are made of the best brands of Steel Plates; longitudinal seams, are double riveted, and are well made in all respects. The Smoke Hoods are of cast iron and will last for years. The following fixtures are furnished: Pop Safety Valve, Steam Gauge, Water Gauge, Gauge Cocks, Check Stop and Blow-off Valves, three Way Exhaust Cock (so that can exhaust either inside the stack, to create strong draft, or outside as required), Smoke Stack, Grates, Fire Tight Ash Pan with Dampers, Injector with Suction Hose, Fire Irons, and in fact everything complete so there need be no delay in getting to work. All boilers are fired up and tested to 100 lbs. steam pressure, and engines run several hours before being shipped, and are thoroughly inspected, thus ensuring their being in proper working condition when shipped. Our Engine Castings are extra strong being made of best brands of iron, and all materials and workmanship are of best quality.

OUR PRICES are as low as is consistent with first-class work, and includes delivery free on board cars here in shipping order. They are subject to change without notice.



Single Cylinder Hoisting Engine,

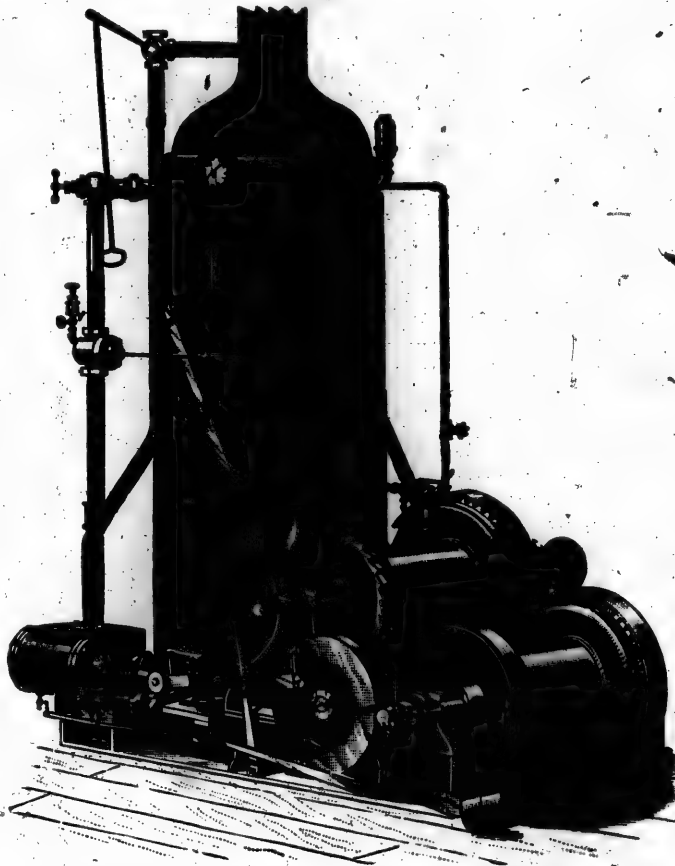
WITH ONE FRICTION DRUM, BOILER AND FIXTURES COMPLETE.

SPECIALLY ADAPTED FOR

Pile Driving, Railroads, Contractors, Bridge Builders, Quarries, Docks,
Coal Yards, &c.

TABLE OF SIZES, DIMENSIONS, POWER, &c.

Size—No. of Engine.	Usually rated Horse Power.	Cylinders.		Boilers.			Drums.		Weight hoisted on single rope.	Suitable weight of Pile Hammer	Estimated ship- ping weight.
		Bore. Inches.	Stroke. Inches.	Dia. Inches.	Height. Inches.	No. of 2 in. Tubes	Dia. Inches.	Length. Inches.			
3	7	6½	8	30	66	44	12	19	1800 lbs.	1300 lbs.	5200 lbs.
4	9	6	12	32	72	52	12	21	2400	1800	6000
5	12	7	12	37	72	70	12	23	3200	2400	8500
6	16	8	12	37	84	70	15	27	4000	3000	7800



Single Cylinder Hoisting Engine,

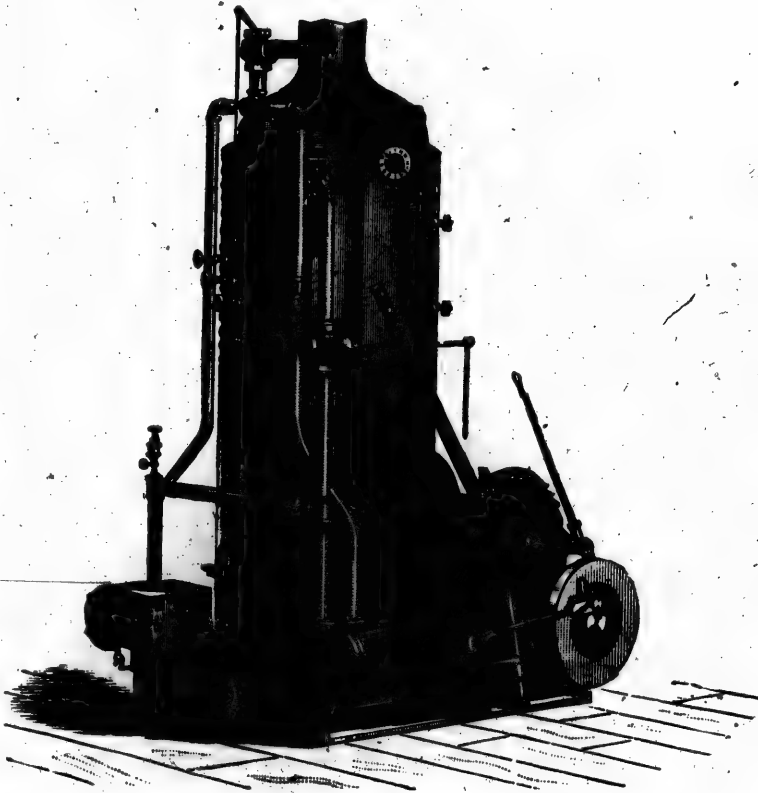
WITH TWO FRICTION DRUMS, FOOT-BRAKE, BOILER AND FIXTURES COMPLETE.

SPECIALLY ADAPTED FOR

Quarries, Dock and Bridge Builders, Railroads, Pile Driving, Contractors, &c.

TABLE OF SIZES, DIMENSIONS, POWER, &c.

Size—No. of Engine.	Usually rated Horse Power.	Cylinders.		Boilers.			Drums.		Weight hoisted on Single Rope.	Suitable weight of Pile Hammer	Estimated shipping weight.
		Bore. Inches.	Stroke. Inches.	Dia. Inches.	Height. Inches.	No. of 2 in. Tubes	Dia. Inches.	Length. Inches.			
10	7	6½	8	66	66	44	12	19	1800 lbs.	1300 lbs.	6000 lbs.
11	9	6	12	72	72	52	12	21	2400	1800	7000
12	7	8	10	72	72	70	12	23	3200	2400	7500
13	16	8	12	84	84	70	15	27	4000	3000	9000



Double Cylinder Hoisting Engine,

WITH ONE FRICTION DRUM, BOILER AND FIXTURES COMPLETE.

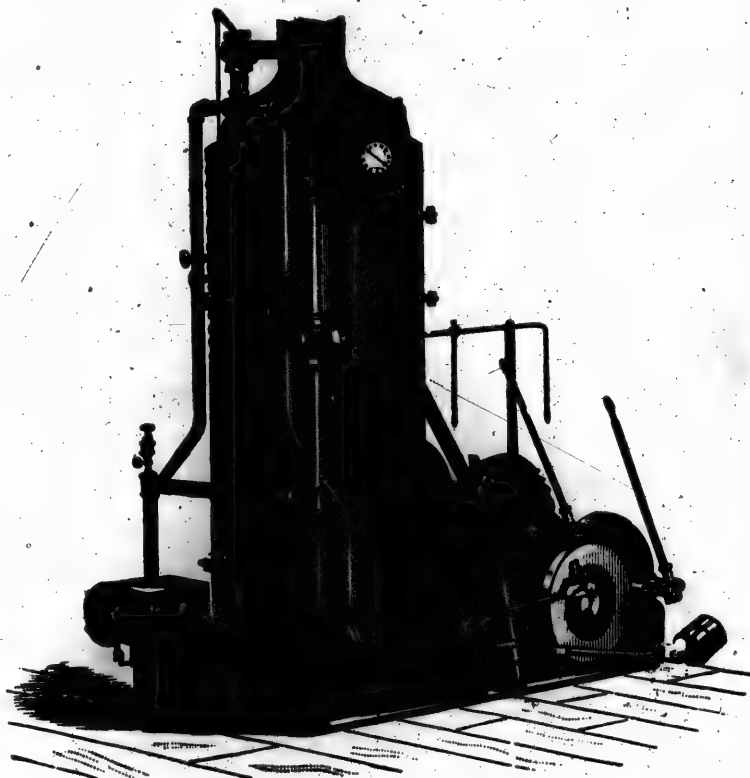
SPECIALLY ADAPTED FOR

Pile Driving, Quarries, Dock and Bridge Building, Coal Yards, Contractors, &c.

TABLE OF SIZES, DIMENSIONS, POWER, &c.

Size—No. of Engine.	Usually rated Horse Power.	Cylinders.		Boilers.				Drums.		Weight hoisted on Single Rope.	Suitable weight of Pile Hammer.	Estimated shipping weight.
		Bore. Inches.	Stroke. Inches.	Dia. Inches.	Height. Inches.	No. of 2 in. Tubes.		Dia. Inches.	Length. Inches.			
17	14	6½	8	34	84	60		12	21	3500 lbs.	2600 lbs.	6000 lbs.
18	18	6	12	37	84	70		12	23	4800	3500	7000
19	24	7	12	41	90	90		12	27	6500	4800	7500
20	32	8	12	44	96	102		15	32	8000	6000	9000

Size—No. of Engine.
24
25
26
27.



Double Cylinder Hoisting Engine,

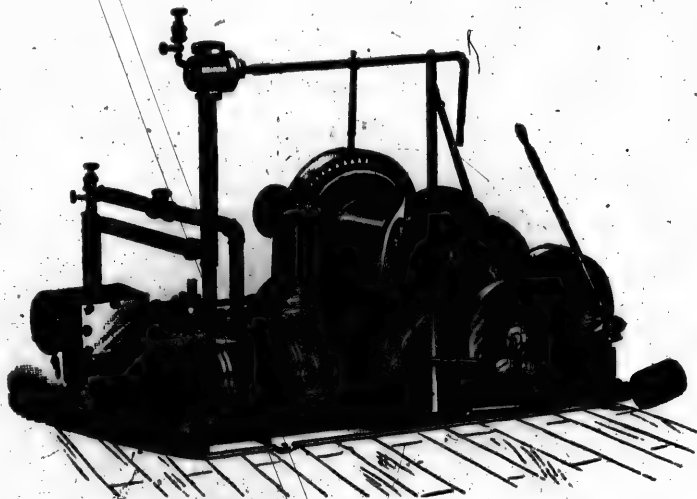
WITH TWO FRICTION DRUMS, FOOT BRAKE, BOILER AND FIXTURES COMPLETE.

SPECIALLY ADAPTED FOR

Quarries, Bridge and Dock Building, Pile Driving, Railroads, &c.

TABLE OF SIZES, DIMENSIONS, POWER, &c.

Size—No. of Engine.	Usually rated Horse Power.	Cylinders.		Boilers.			Drums.		Weight hoisted on Single Rope.	Suitable weight of Pile Hammer.	Estimated shipping weight.
		Bore, Inches.	Stroke, Inches.	Dia. Inches.	Height, Inches.	No. of 2 in. Tubes	Dia. Inches.	Length, Inches.			
24	14	6½	8	34	84	60	12	21	3500 lbs.	2600 lbs.	6900 lbs.
25	13	6½	12	37	84	70	12	23	4800	3500	8000
26	24	7	12	41	90	90	12	27	6500	4800	8500
27	32	8	12	44	96	102	15	32	8000	6000	10200



Double Cylinder Hoisting Engine,

WITH TWO FRICTION DRUMS AND FOOT BRAKE.

WITHOUT BOILER.

SPECIALLY ADAPTED FOR

Contractors, Docks, Warehouses, Quarries, Dock and Bridge Building.
Coal Yards and General Hoisting.

THESE Engines are designed for hoisting purposes where Boilers are already in place, or where an independent boiler is used to run one or more engines, or where it would not be convenient or possible to have a boiler, steam being conveyed a distance to them in pipes. They are well adapted for use on long docks, as they can be placed at convenient intervals and connected by one main pipe, and one or more used as required. This arrangement is much superior to a long line of shafting, with independent drums, as engines can be placed where most convenient and the pipes brought to them.

We make them Single Cylinders with one or two Drums, and Double Cylinders with one or two Drums.

We also make with Link Motion for Reversing the Engines.

HOISTING ENGINES

WITHOUT BOILERS.

TABLES OF SIZES, DIMENSIONS, POWER, &c.

Size—No. of Engine.	Usually Rated Horse Power.	Cylinders.		Drums.		Weight hoisted on Single Rope.	Estimated Shipping Weight.
		Bore. Inches.	Stroke. Inches.	Dia. Inches.	Length. Inches.		

SINGLE CYLINDERS.

WITH ONE DRUM.

31	7	6½	8	12	19	1800 lbs.	4000 lbs.
32	9	6	12	12	21	2400	4000
33	12	7	12	12	23	3200	5000
34	16	8	12	15	27	4000	6100

WITH TWO DRUMS.

38	7	6½	8	12	19	1800 lbs.	4800 lbs.
39	9	6	12	12	21	2400	5600
40	12	7	12	12	23	3200	6000
41	16	8	12	15	27	4000	7300

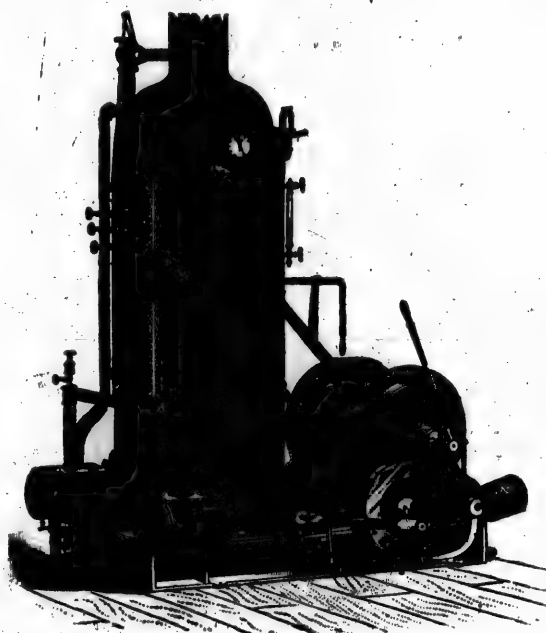
DOUBLE CYLINDERS.

WITH ONE DRUM.

45	14	6½	8	12	21	3500 lbs.	4200 lbs.
46	18	6	12	12	23	4800	5000
47	24	7	12	12	27	6500	5400
48	32	8	12	15	32	8000	6500

WITH TWO DRUMS.

53	14	6½	8	12	21	3500 lbs.	5900 lbs.
54	18	6	12	12	23	4800	6000
55	24	7	12	12	27	6500	6400
56	32	8	12	15	32	8000	7700



High Speed Coal Hoisting Engine,

WITH DOUBLE CYLINDERS AND ONE FRICTION DRUM, FOOT BRAKE, BOILER AND FIXTURES COMPLETE.

THIS Engine is especially designed for Hoisting Coal at a high rate of speed. It is particularly adapted for unloading vessels and barges, or hoisting into high pockets where a high rate of speed is desired, and it will handle more coal, and unload more vessels or barges than any other style of engine. The Friction Drum is of our usual style only larger in diameter and is furnished with a Foot Brake for lowering the empty tubs. It is also well adapted for mining or other purposes where a comparatively light load is to be handled at a high rate of speed.

TABLE OF SIZES, DIMENSIONS, POWER, &c.

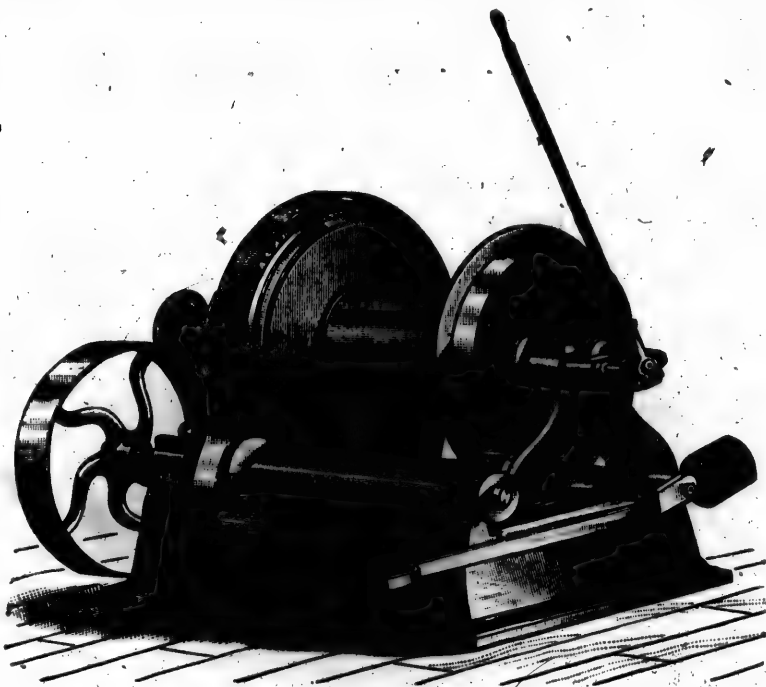
Size—No. of Engine.	Usually Rated Horse Power.	Cylinders.		Boilers.			Drums.		Weight hoisted on Single Rope.	Estimated shipping weight.
		Bore. Inches.	Stroke. Inches.	Dia. Inches.	Height. Inches.	No. of 2 in. Tubes.	Dia. Inches.	Length. Inches.		
61	18	6	12	37	84	70	28	23	2100 lbs.	7000 lbs.
62	24	7	12	41	90	80	28	27	2800	7500
63	32	8	12	44	96	102	34	32	3600	9000

Specially adapted

THE above Brake Gear service the same has Foot Brake We only long; Pulley 2 Weight hoisted 38x53 inches.

To be driven operating one on Large Bulk

Machinery 27 Persons respond with



Hoisting Machine,

WITH ONE FRICTION DRUM AND FOOT BRAKE.

Specially adapted for Factories, Docks, Warehouses, Ice Houses, Quarries, Mines, Inclines, &c.

THE above cut represents our Improved Friction Drum Belt Hoister, with Foot Brake and Pulley. It is designed to be driven by means of a Belt, Coupling or Gearing, where parties have their own power. It is a compact, substantial and serviceable machine, and is mounted on a strong iron bed plate. The Drum is the same as our Hoisting Engine Drums, and is operated in same manner. It has Foot Brake for lowering the load.

We only make one size of this machine: Drum 12 to 28 inches diameter, 23 inches long; Pulley 20 inches diameter, 8½ inches face; proportion of gearing 13 to 60 teeth. Weight hoisted on single line 1500 to 5000 lbs.—100 to 200 feet per minute. Bed Plate 38x53 inches.

HOISTING MACHINES,

WITH ONE OR MORE PAIRS OF FRICTION DRUMS,

To be driven by gears, belt or coupling, from Stationary Engines or other power, for operating one or more Stone or other Derricks in Quarries, Stone Yards, Coal Docks, or on Large Buildings. We also arrange our

HOISTING ENGINES

With two or more pairs of Friction Drums for the above uses.

Machinery for Inclines in Quarries, Mines, Coal Yards and other Special Duty.

Persons in want of any such Machinery will find it to their advantage to correspond with us before ordering.



No. 1 Horse-Power Hoister,

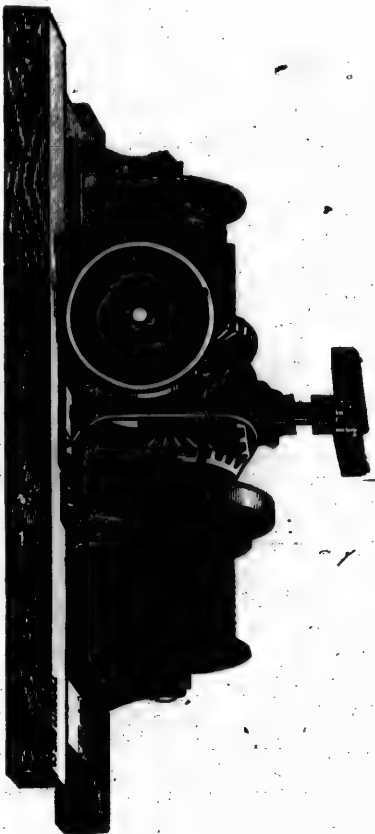
WITH PATENT FRICTION HOISTING AND BOOM DRUMS, AND PATENT SPEED GEAR FOR WINDING UP SLACK ROPE WITH THE HORSE INSTEAD OF BY HAND.

SPECIALLY ADAPTED FOR RAILROAD AND CANAL CONTRACTORS, BUILDERS' AND QUARRYMEN'S USE.

WITH these Hoisters there can be done from 25 to 40 per cent. more work per day than with any Clutch Drum Hoister; for the drum begins to wind up the rope instantly instead of waiting until the horse has made part of a turn. Can also stop hoisting and lower instantly without waiting for the horse to stop and back up, as with a Clutch Drum Hoister. By means of our Patent Friction Speed Gear, the slack rope or empty stone hooks can be taken up seven times as fast as a load, which saves a great deal of time, especially when lowering stone into a deep foundation or pier pit. In these Hoisters both Drums are provided with powerful brake belts lined with friction board, with which a boy lower and hold easily, within an inch of where it is to be placed, any load that a horse can lift. In fact contractors will find that this machine will more than save the difference in cost over a Clutch Drum Hoister in one month's work. These Drums are grooved for wire rope.

DIMENSIONS, CAPACITY, &c.—Weight hoisted on single line, 5000 lbs. 16 feet per minute; on single block 10,000 lbs. 8 feet per minute. Geared 30 to 32; Hoisting Drum 18 in. diameter, 18 in. long; Boom Drum 18 in. diameter, 13 in. long. Estimated shipping weight, 3400 lbs.

Geared 30 to 32. Hoisting Drum 18 in. diameter, 18 in. long; Boom Drum, 18 in. diameter, 13 in. long. Estimated shipping weight, 3800 lbs.



No. 2 Horse-Power Hoister,

WITH CLUTCH HOISTING AND BOOM DRUMS AND ATTACHMENT FOR WINDING UP SLACK ROPE BY HAND.

Specially Adapted for Quarrying and Heavy Masonry, Railroad and Canal Contractors' Use.

It is superior to and has advantages over any Horse-Power Hoister heretofore in use, being stronger, more compact and convenient. The crank of hand attachment, for winding up the slack rope, is placed near the centre and near to all the levers, thus enabling the driver to operate the whole of them without changing his position, and also to see the stone or weight all the time, and thus get it into position quicker. A horse can raise 8 or 10 tons with this machine. The Boom can also be raised while the weight is on it or being raised, or can raise the weight and lower the Boom or raise the Boom and lower the weight, which enables the builder to place a stone exactly where he wants it. The brake belt on both Hoisting and Boom Drums are lined with friction board, which will hold twice as much as the iron not lined, so that a boy can easily lower a stone to within an inch of its place and have full control of it. By thus operating the Boom with the Hoister, instead of six or eight men, the work is very much facilitated and the men's time saved. For quarrying, and handling stone while cutting or loading them, it gives the quarryman and stonecutter a great advantage in the saving of time, muscle and money. The Drums are both grooved for wire rope.

DIMENSIONS, CAPACITY, &c.—Weight hoisted on single line, 5000 lbs. 16 feet per minute; on single block, 10,000 lbs. 8 feet per minute. Geared 30 to 32. Hoisting Drum, 16 in. diameter, 18 in. long; Boom Drum, 18 in. diameter, 15 in. long. Estimated shipping weight, 2800 lbs.

DIMENSIONS, CAPACITY, &c.—Weight hoisted on single line, 5000 lbs. 16 feet per minute; on single block, 10,000 lbs. 8 feet per minute. Geared 30 to 32. Hoisting Drum, 16 in. diameter, 18 in. long; Boom Drum, 18 in. diameter, 15 in. long. Estimated shipping weight, 2800 lbs.



No. 3 Horse-Power Hoister,

WITH CLUTCH DRUM AND PATENT CLUTCH SPEED GEAR,

SPECIALLY ADAPTED FOR

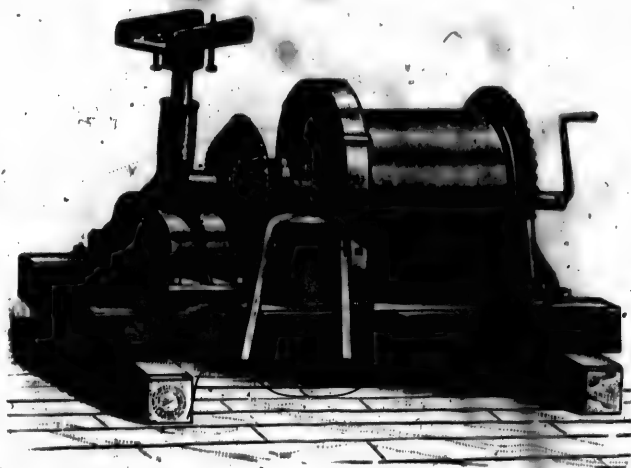
Mining and Prospecting Purposes; Also, for Builders' and Quarrymen's Use and Railroad Work.

THIS Hoister is intended for use with Derricks where the Boom is not required to be raised or lowered often ; for hoisting materials on buildings in course of erection ; for hoisting out of shafts when prospecting and mining, or any such use. When lifting heavy loads the slow motion is used ; for light loads the fast motion, which will raise over three times as fast as the other and thus save two-thirds the time that would be taken by a Hoister without the Patent Gear. The brake belt is lined with Friction Board, and will hold, or lower safely, any load a horse can lift. The Drum is plain so can use either hemp or wire rope on them.

DIMENSIONS, CAPACITY, &C.

Hoisted on single line, slow motion, 5000 lbs., 14 ft. per minute ; single block, 10,000 lbs., 7 ft. per minute. Fast motion, 1500 lbs., 45 ft. per minute ; single block, 3000 lbs., 22 ft. per minute. Drum, 20 in. diameter, 20 in. long.

Estimated Shipping weight, 1500 lbs.



No. 5 Horse-Power Hoister,

WITH CLUTCH DRUM AND HAND ATTACHMENT FOR WINDING UP BLACK ROPE.

SPECIALLY ADAPTED FOR

Mining and Prospecting, Builders, Quarrymen and Railroad Contractors' Use.

THIS Hoister is intended for use with Derricks where the boom is not required to be raised or lowered often, for hoisting materials on buildings in course of erection; for hoisting out of shafts when prospecting and mining, or any such use. The brake belt is lined with Friction Board, and will hold, or lower safely, any load a horse can lift. The Drum is plain so can use either hemp or wire rope on them.

DIMENSIONS, CAPACITY, &c.

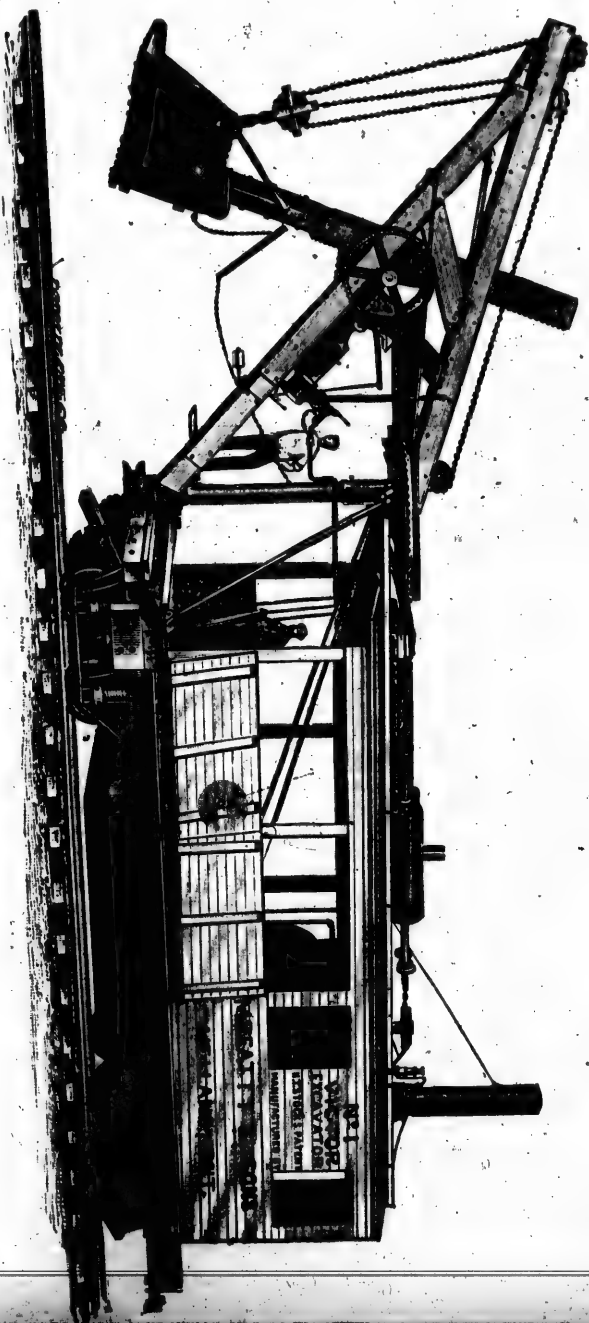
Weight hoisted on single line, 2500 lbs., 28 ft. per minute; on single block, 5000 lbs., 14 ft. per minute. Geared 32 to 32. Drum, 20 in. diameter, 20 in. long. Estimated shipping weight 1200, lbs.

No. 4. Horse-Power Hoister

Is the same as No. 5 except that it is geared to run faster.

DIMENSIONS, CAPACITY, &c.

Weight hoisted on single line, 1500 lbs., 45 ft. per minute; on single block, 3000 lbs., 22 ft. per minute. Geared 40 to 24. Estimated shipping weight, 1200 lbs.



Stock's No. 1 Victor Excavator.

(We have Secured the Sole Right to Build in Canada.)

Victor Excavator.

THE cut on page 5 represents H. T. Stock's Patent Railroad Excavator, known as the Victor Excavator, which secured the Gold Medal (the highest premium) at the National Exposition of Railway Appliances, held in Chicago, June, 1883. It was there subjected to a thorough examination by a careful and competent committee of expert railroad men, who were selected especially for the Exhibition. The Car of Excavator is 31 feet long, 10 feet wide, and mounted on 8 wheels. The frame of car and house is made of Iron Channels and Beams, and is put together so as to make a very strong and durable machine. The main Engine is horizontal, with two cylinders, has reversing gear, and is only used for hoisting the dipper and moving car. The Hoisting Drum is driven by a Steam Friction Clutch that can be thrown in or out with engine running at full speed, or with full power on in digging; it is operated by a steam cylinder which makes it much easier for the runner and enables him to operate faster.

The swinging is done by two independent Steam Cylinders connected direct to the Turntable chains without the intervention of any shafts or gears, making it the simplest and quickest arrangement in use. The Forcing Engines on Crane have two cylinders and a very simple reversing attachment—with them the dipper can be run out or in as may be required, either in digging or in getting into the right position over a car to dump load.

The Mast is of a new pattern, being a hollow steel casting so the hoisting chain can pass in at the top, down through it and out at the bottom, which obviates the necessity of having a hole through the side for chain to pass out of, thus making a mast that cannot break, as the cast-iron ones with hole in the side that are used by other makers do.

The Crane and Turntable are of iron substantially fastened together and braced so as to make it extra strong. The Crane is arranged so that it can be lowered down level on top in a few minutes; this improvement, with the Adjustable Jack Arms that can be disconnected in a few minutes, enables the Victor Excavator to be made ready for moving any where that an ordinary passenger car will go—through tunnels or under bridges—and upon arriving at destination can be got ready for work in the same time it took to get ready for moving.

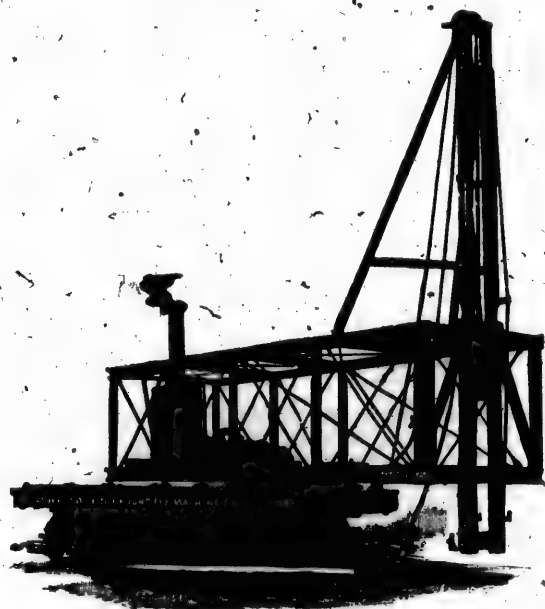
We use Steel Racks and Pinions on the Dipper Handle; Edges' Best Best Crane Chains for hoisting and swinging.

The Boiler is large and of ample capacity to steam easy, made of best Steel Plates.

There is a large Water Tank under the car and out of the way, that holds enough to supply the boiler for half a day.

With all the improvements embodied in this machine it is considered the best Excavator made, and it will do the largest amount of work at the least expense.

We have secured the sole right to manufacture the Victor Excavator in Canada.



Stock's Railroad Pile Driver.

(We have Secured the Sole Right to Build in Canada.)

THE above cut represents Stock's Improved Railroad Pile Driver in working position, with 16 ft. extension, and Turntable at both ends, which allows of its being used on either end of car. It will drive piles 16 ft. ahead of track, 16 ft. on either side of centre of track, or at any point within 16 ft. radius. It has our Double Cylinder Hoisting Engine with Patent Friction Drum for Hoisting the Hammer, and Spool on end of drum shaft for raising the pile. The hammer line is made fast to the hammer and goes with it, which enables it to strike fully three blows for one that can be done where the old style of a clutch drum and nippers are used, and also doing away with an expensive and dangerous device. The hammer drum is provided with a Ratchet and Pawl for holding the hammer in any position required while the pile is being raised and got into place for receiving the blow.

The machinery is placed upon a strong Bridge Frame Work of Channel Iron, and is moved from centre to either end upon fixed rollers where it can be turned to any position upon turntable and clamped to car while being used. The Leaders can be lowered into position shown on page 8, and being balanced by placing the hammer about 5 ft. from lower end of Leaders; can be easily handled by two men and done in a few minutes, and can then be run anywhere in a freight train. There is a Water Tank under the car which holds a day's supply of water.

We can also make them to propel themselves so that they can be moved without having a locomotive in attendance.

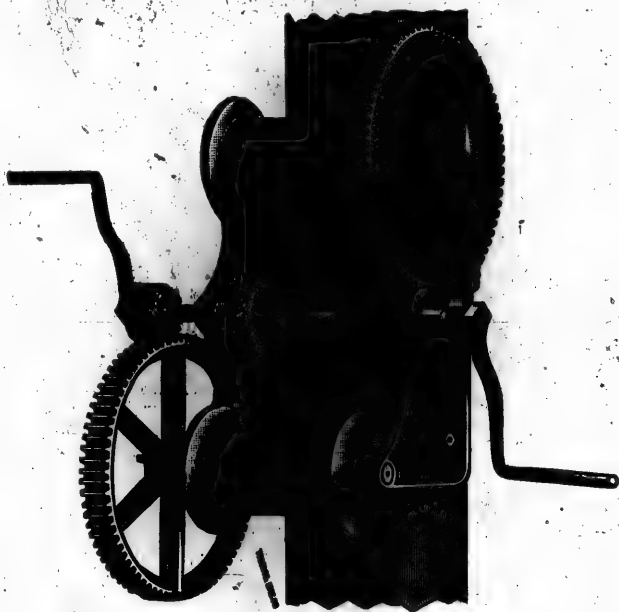
tion of gears : first pair, 75 to 15 cogs ; second pair, 36 to 15 cogs. The Drums are plain, 8 inches in diameter, 15 inches long between flanges.

Dimensions with gears on and cranks off, 4 ft. 6 in. high, 2 ft. 10 in. wide.

Weight hoisted by two men on single line, with double gear, 1500 lbs. ; with single gear, 700 lbs.

Weight, complete, 650 lbs.

Iron



Derrick Hand-Power.

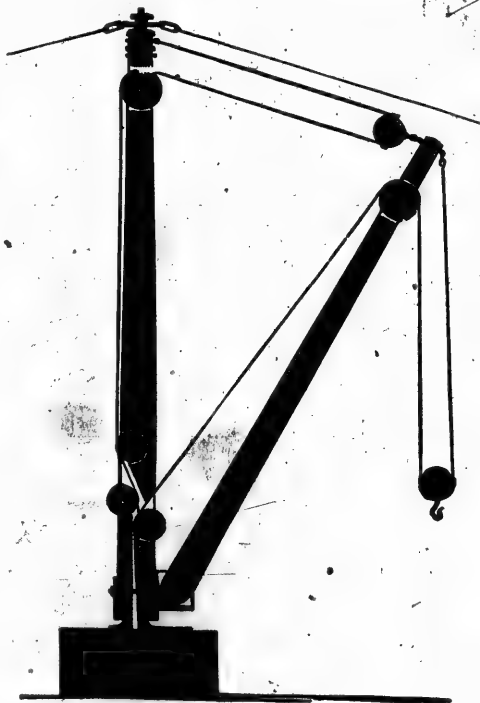
THIS represents our Double Drum, Double Geared Hand-Power attached to a Derrick. It is constructed with iron cheeks so that it can be bolted to a derrick mast sixteen inches wide or under. The upper drum is to hoist the load, the lower drum to raise or lower the boom; dogs are provided to keep the load or boom in position while the crank shaft is changed from one gear to the other, and to hold the boom or load in any position required. For the brake to be used in lowering use manilla rope, about one inch in diameter, three or four times around crank shaft—fasten the one end of rope by a staple to the mast; it can be used either single or double geared by changing the cranks from one shaft to the other. Proportion of gears: first pair, 75 to 15 cogs; second pair, 36 to 15 cogs. The Drums are plain, 8 inches in diameter, 15 inches long between flanges.

Dimensions with gears on and cranks off, 4 ft. 6 in. high, 2 ft. 10 in. wide.

Weight hoisted by two men on single line, with double gear, 1500 lbs.; with single gear, 700 lbs.

Weight, complete, 650 lbs.

Stone Derrick Irons.



Sectional View of Derrick,
SHOWING POSITION TO PLACE SHEAVES, &c.



FIG. 1.
Mast and Boom Shoe for
Bottom of Mast and Boom.



FIG. 2.
Step with one Sheave for
Single Drum H. P. Hoister
or Single Drum Engine.



FIG. 3.
Step with two Sheaves for
Double Drum H. P. Hoister



FIG. 6.
Iron Sheaves for Wire
Rops.



FIG. 5.
Wrought Iron Sheave
Block.



FIG. 4.
Step with two Sheaves for
Double Drum Engine.

Stone Derrick Irons Continued.



FIG. 7.
Wrought Iron Gudgeon for Top of Mast.



FIG. 8.
Guy Cap for Top of Mast.



FIG. 9.
Plain Flat Band for Top of Mast.



FIG. 10.
Flat Band for Top of Mast with one link for end of Boom Rope.



FIG. 11.
Two Links with Sheave and Pin for point of Boom to take Boom Rope instead of Sheave Block, for use with Fig. 13 Band or Fig. 15 Socket.



FIG. 12.
Clevis for end Boom to take end of Hoisting Rope.



FIG. 13.
Band and Bolt for end of Boom to use with Fig. 11 Sheaves and Links and Fig. 12 Clevis.



FIG. 14.
Band with two Links for end of Boom.



FIG. 15.
Socket for end of Boom, with Sheave.



FIG. 16.
Socket for Top of Mast.



FIG. 17.
Strap for Top and Bottom of Leg.



FIG. 18.
Clamp with Bolts for Wire Rope.

Price List of Derrick Irons.

(Cancel all Former Lists. Prices Subject to Change Without Notice.)

No. 1 Mast and Boom Shoe for 15 inch to 18 inch Mast	\$16 00
No. 2 " " " 12 inch to 14 inch Mast	12 50
No. 3 " " " 9 inch to 11 inch Mast	9 00
No. 1 Step with 2 14 inch Sheaves for Double Drum H. P. Hoister	15 00
No. 2 " " 2 14 inch " " " " " "	11 50
No. 3 " " 2 12 inch " " " " " "	9 00
No. 1 Step with 2 14 inch Sheaves for Double Drum Hoisting Engine	14 00
No. 2 " " 2 14 inch " " " " " "	10 50
No. 3 " " 2 12 inch " " " " " "	8 50
No. 1 Step with 1 14 inch Sheave for Single Drum H. P. Hoister or Hoisting Engine	12 00
No. 2 " " 1 14 inch " " " " " "	8 50
No. 3 " " 1 12 inch " " " " " "	7 00
No. 1 Guy Cap for top of Mast, with 8 Guy Links	8 00
No. 2 " " " " 6 " " " " " "	7 00
No. 3 " " " " 6 " " " " " "	6 00
No. 1 Wrought Iron Gudgeon for top of Mast, 3½ inches in diameter	5 50
No. 2 " " " " 3 inches " " " " " "	4 50
No. 3 " " " " 2½ inches " " " " " "	3 50
Plain Flat Band for top of Mast, 14 inches in diameter	2 25
" " " " 11 inches " " " " " "	1 75
" " " " 9 inches " " " " " "	1 50
Flat Band for top of Mast, 14 inches diameter, with 1 Link	2 75
" " " " 11 inches " " " " " "	2 25
" " " " 9 inches " " " " " "	2 00
No. 2 Cast Iron Socket for top of 14 in. Mast, with 3 in. Wrought Iron Gudgeon	9 00
No. 3 " " " " 11 in. " 2½ in. " " " " "	6 50
No. 2 Cast Iron Socket for point of Boom, with 1 14 inch Sheave	12 00
No. 3 " " " " 1 14 inch Sheave	8 00
Round Band for point of Boom, 12 inches diameter, with 2 Links	3 50
" " " " 10 inches diameter, with 2 Links	2 75
" " " " 8 inches diameter, with 2 Links	2 00
Flat Band for point of Boom, 12 inches diameter, with 1 Bolt	4 00
" " " " 10 inches diameter, with 1 Bolt	3 00
" " " " 8 inches diameter, with 1 Bolt	2 00
2 Links for point of Boom, with 14 inch Sheave and Pin	5 00
Clevis for point of Boom	1 25
No. 1 Wrought Iron Bolt, with 14 inch Sheave, 2 inch Hook	9 00
No. 2 " " " 14 inch " 1½ inch Hook	8 00
No. 3 " " " 12 inch " 1½ inch Hook	7 00
No. 1 Wrought Iron Straps for Top of Leg, 6 in. by 1½ in., with bolts, per pair	18 00
No. 2 " " " 5 in. by 1½ in., " " "	15 00
No. 3 " " " 4 in. by 1½ in., " " "	10 00
No. 1 Wrought Iron Straps for Bottom of Leg, 6 in. by 1 in., with bolts, per pair	11 00
No. 2 " " " 5 in. by 1 in., " " "	8 50
No. 3 " " " 4 in. by 1 in., " " "	6 00
Sheaves for Wire Rope, 6 in. dia., 80c; 8 in. dia., \$1.00; 10 in. dia., \$1.25; 12 in. dia., \$1.50; 14 in. dia., \$1.75; 16 in. dia., \$2; 20 in. dia., \$3.00.	
Steel Sheave Pins, with Key, 1½ dia., up to 6 in. long, 30c; 7 in. to 10 in., 40c; 11 in. to 16 in., 50c.	
Strap with Pin and Spike for Sheave to lead Boom Rope on D. D. H. P. Hoisters, \$1.25	
Clamps, with Bolts for Wire Rope, ½ in. dia., 40c; ¾ in. dia., 50c; 1 in. dia. 60c; 1 in. dia., 75c; 1½ in. diameter, 90c.	

Homogeneous Steel Galvanized Wire Ropes

FOR SHIPS' RIGGING AND GUYS FOR DERRICKS.

With 6 Strands of 7 Wires each—Hemp Centre.

Circumference in inches.	Diameter in inches.	Breaking strain in tons of 2000 lbs.	Circumference of Hemp Rope of equal strength.	Weight per fathom in lbs.	Price per pound in cents.
1½	½	4	3	2	15
2	⅝	7	4	3½	12
2¼	¾	8½	4½	4¼	11
2¾	⅞	12½	5½	6¾	10
3	1	16	6½	8	10
3¾	1⅛	20	7½	10¾	9½
3¾	1¼	25	8½	12	9½
4¼	1⅝	30	10½	16	9½
4½	1½	36	11	18	9½

Galvanized Wire Rope should never be used for Running Rope.

These Ropes are suitable for Ships' Rigging, Stays, Standing Ropes, Guys, etc., etc.

An advance of 10 per cent. will be charged for these Ropes if ordered with Wire Centres.

Galvanized Iron same price as Steel Wire Ropes.

CRUCIBLE CAST-STEEL

Standard Hoisting Ropes,

With 6 Strands of 19 Wires each—Hemp Centres.

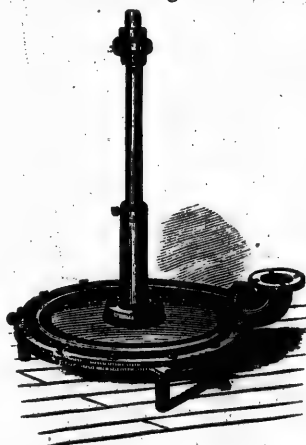
Circumference in inches.	Diameter in inches.	Breaking strain in tons of 2000 lbs.	Proper working load in tons of 2000 lbs.	Average weight per foot.	Circumference of hemp rope of equal strength.	Price per foot in cents.
1½	½	6	1¼	.39	4½	15
2	⅝	12	2¼	.63	5¼	18
2¼	¾	18	3½	.90	6½	21
2¾	⅞	23	4¾	.99	8	27
3	1	29	5¾	1.38	9¼	34

N. B.—An advance of 10 per cent. will be charged for these Ropes if ordered with Wire Centres.

The weight of Ropes with Wire Centres is 10 per cent. more than that of Ropes with Hemp Centres.

Centrifugal Pumps.

THE principle on which the CENTRIFUGAL PUMP operates is too well known to need any particular explanation. The simplicity of pumps which act on the Centrifugal principle makes them the most efficient and durable of all pumps, the wear being very slight as compared with plunger pumps, and the cost is very much less for the same capacity, which is the reason of their being used in so many Tanneries, Paper Mills, Pulp Mills, Breweries, Distilleries, and by Contractors for draining Lock Pits, Cofferdams, Sewers, emptying Dry Docks, Irrigating, Wrecking, Fire Purposes, and various other uses—being in constant use in many of these from five to ten years without wanting any repairs. We use the Hollow Arm Wheel in all pumps for raising water or any liquids not having stringy substances in it. The Concave Arm Wheel we use for pumping "half stuff" in Paper Mills, or any such material which is liable to clog.

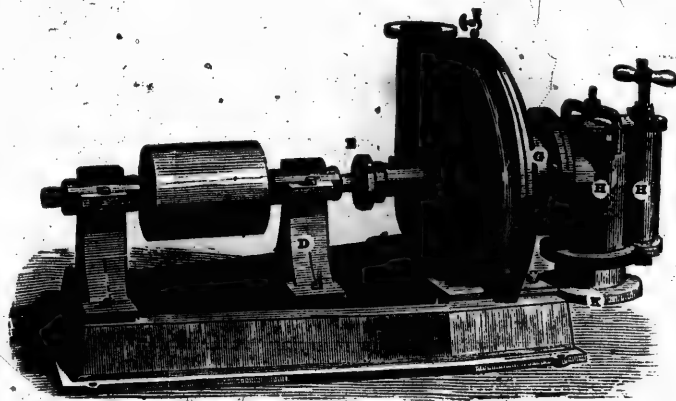


The Vertical Pump

Is intended to stand on the bottom of the tank, tub, well or reservoir, as the case may be, or it can be fastened at any required distance from the bottom; the only essential point being, that the pump should be constantly immersed in the fluid to be raised. For draining lock pits, coffer dams, tan vats, etc., in short for any situation in which large quantities of very foul water containing mud, sand, gravel, bark, etc., are to be raised expeditiously and cheaply, we consider our VERTICAL PUMP unequalled by any other with which we are acquainted. It is always ready for action, and rarely or never gets out of order. It can hardly break, or wear out, or clog. It raises enormous quantities of fluid with comparatively little power, and is the admiration of all who see it work. The shaft in Pumps is from 3 to 4 feet long. We furnish one coupling, one elbow and the pulley, with each pump.

Directions for Setting up Vertical Pumps.

In putting down be careful to have a perfect bearing for each leg, and see that the shaft turns easily; put the pulley on the upright shaft, and near it a guide pulley, under or over the belt as the case may require, and make a quarter twist in the belt when you drive from a horizontal shaft. It makes no difference which way the driving shaft runs, as the twist of the belt may be changed to correspond.



The Horizontal Pump,

RIGHT HAND, WITH SUCTION PRIMER ATTACHED.

IT is frequently desirable to use our Pump as shown above. It is as though a "Vertical" Pump was turned over on its side, the shaft then being horizontal—the circumstance which gives the pump its distinguishing name.

In point of execution there is no important difference between the Horizontal and the Vertical Pump. The former has the advantage of being more readily examined in case of accident.

In using the Horizontal Pump it is necessary that the Pump should be full of water before it will start. If the water is taken from a tank or flume level with the Pump the water should stand in them as high as top of the Pump; if the water is to be taken from a point below the Pump there must be a Foot Valve at the bottom of the suction pipe, to hold it and the Pump full of water, which must be put in, either at the discharge opening with pails, or by means of a Suction Primer H H, as shown above attached to Pump. The part shown at the extreme right is a small lift-pump, worked by hand, and used only in charging the main pump before starting; the pet-cock (shown on top of shell) is opened and the Primer is worked until no more air is driven out of it. When the Pump is evidently full (and not before) the pet-cock is closed, and the main Pump is then ready to be started. The Pump may be emptied by withdrawing the screws near the bottom of Primer and shell of Pump. This should always be done when the Pump is liable to freeze up over night.

The Primer is finished ready to attach the suction pipe at K. All our Primers have rubber valves.

It is essential that the stuffing-boxes, at E, and the top of Primer and all joints should be well packed and *air-tight*. Candle-wicking moistened with oil is the best for the stuffing-boxes.

The suction-pipe may run horizontally, or bend in any direction to suit the location of the fluid to be raised. It should not, however, descend towards the Pump, which should be higher than any part of the suction-pipe. The amount of elevation (as a basis of speed) should be reckoned from the *bottom* of suction-pipe to the *top* of discharge pipe. The Suction-pipe should be larger than discharge pipe so as to make less friction on water, and thus take less power or throw more water with same power; short bends increase friction and should be avoided as much as possible; can use suction pipe same size as discharge but it will not give as good results.

Directions for Setting up Horizontal Pumps.

Great care should be used when setting up the Pump to give the suction-pipe firm and reliable support, other than its attachment to the Pump. A neglect of this indispensable precaution would be apt to produce a springing or twisting (or even cracking) of the suction side of the Pump shell, by either of which the working of the pump would be materially interfered with or stopped. The joints in the suction-pipe must be *air-tight* or Pump will not work well, if it does at all; therefore see that a *support amply sufficient* to sustain the weight of the suction-pipe and its contained fluid be given to the pipe, entirely distinct from the pump itself. A good way to do this is to place a firm support under the flange of pipe where it connects on to the bottom of Primer.

Can the Speed be Diminished?

Our Pumps are designed to raise, not as *little*, but as *much* as possible, and is therefore not offered to raise *small* quantities of water. The table gives the height to which a Pump of specified size, with a certain number of revolutions, will raise a certain quantity of water. Now it is important to know that a very *slight* diminution of speed would result in a considerable reduction of the amount raised *to that height*, and (what is of still greater consequence) a reduction of speed, of sufficient extent to effect an appreciable saving of power, would most likely *cut off the delivery entirely*, at that point. Diminishing the size of stream will not cause it to rise higher, nor will half the speed send a stream half the size to the same point.

PRICE LIST.

[CANCEL ALL FORMER PRICE LISTS AND TABLES.]

No. of Pump.	Size of Suction Pipe.	Size of Discharge Pipe.	Gallons per minute.	IRON PUMPS.				BRASS PUMPS.		
				Vertical.	Horizon- tal.	Primer.	Foot Valve with Strain'r	Horizon- tal.	Primer.	Foot Valve.
1 1/2	2	1 1/2	100	\$ 40 00	\$ 50 00	\$10 00	\$ 3 00	\$ 80 00	\$ 20 00	\$ 6 00
2	2 1/2	2	250	60 00	75 00	15 00	4 00	115 00	30 00	8 00
3	3 1/2	3	600	75 00	100 00	20 00	5 00	155 00	40 00	10 00
4	5	4	1200	95 00	130 00	27 00	6 00	210 00	55 00	12 00
5	6	5	1800	120 00	165 00	35 00	8 00			
6	8	6	2600	150 00	210 00	45 00	10 00			
8	10	8	4700	200 00	280 00	60 00	15 00			
10	12	10	7300	280 00	375 00	75 00	20 00			
12	15	12	10000	360 00	500 00					
15	18	15	16000	520 00	680 00					

TABLE

Showing Horse Power required to Raise Water to Different Heights According to Tabular Capacity.

No. of Pump.	Gallons per minute.	Feet. 10.	Feet. 20.	Feet. 40.	Feet. 60.	Feet. 80.	Feet. 100.
1 1/2	100	.3	.6	1.3	1.9	2.5	3.
2	250	.8	1.58	3.16	4.74	6.23	7.9
3	600	1.9	3.8	7.6	11.4	15.	19.
4	1200	3.8	7.6	15.	22.75	30.3	38.
5	1800	5.7	11.37	22.7	34.	45.5	56.9
6	2600	8.2	16.43	32.85	49.3	67.7	82.
8	4700	13.7	29.7	59.4	89.	118.8	137.
10	7300	23.	46.	92.2	138.4	184.5	230.
12	10000	31.6	63.2	126.4	189.4	252.7	316.
15	16000	50.5	101.	202.2	303.3	404.4	505.5

This TABLE gives Sizes of Pulleys and Discharge Pipes; also, Capacity and Revolutions per minute necessary to Raise Water to Different Heights.

No. of Pump.	Size of Suction pipe.	Size of Discharge pipe.	Capacity per minute.	Diameter of Pulley.	Face of Pulley.	REVOLUTIONS PER MINUTE.					
						10 ft.	20 ft.	40 ft.	60 ft.	80 ft.	100 ft.
No. 1 1/2	2	1 1/2	100	5	5	725	916	1222	1465	1670	1865
No. 2	2 1/2	2	250	7	6	575	727	965	1153	1312	1405
No. 3	3 1/2	3	600	7	7	580	705	915	1082	1222	1353
No. 4	5	4	1200	8	9	547	662	846	995	1123	1240
No. 5	6	5	1800	10	10	495	590	744	870	980	1085
No. 6	8	6	2600	12	12	410	484	607	710	800	880
No. 8	10	8	4700	16	12	333	391	485	573	643	695
No. 10	12	10	7300	20	12	313	367	456	539	605	655
No. 12	15	12	10000	24	14	282	272	335	388	434	480
No. 15	18	15	16000	30	16	193	225	277	320	360	395

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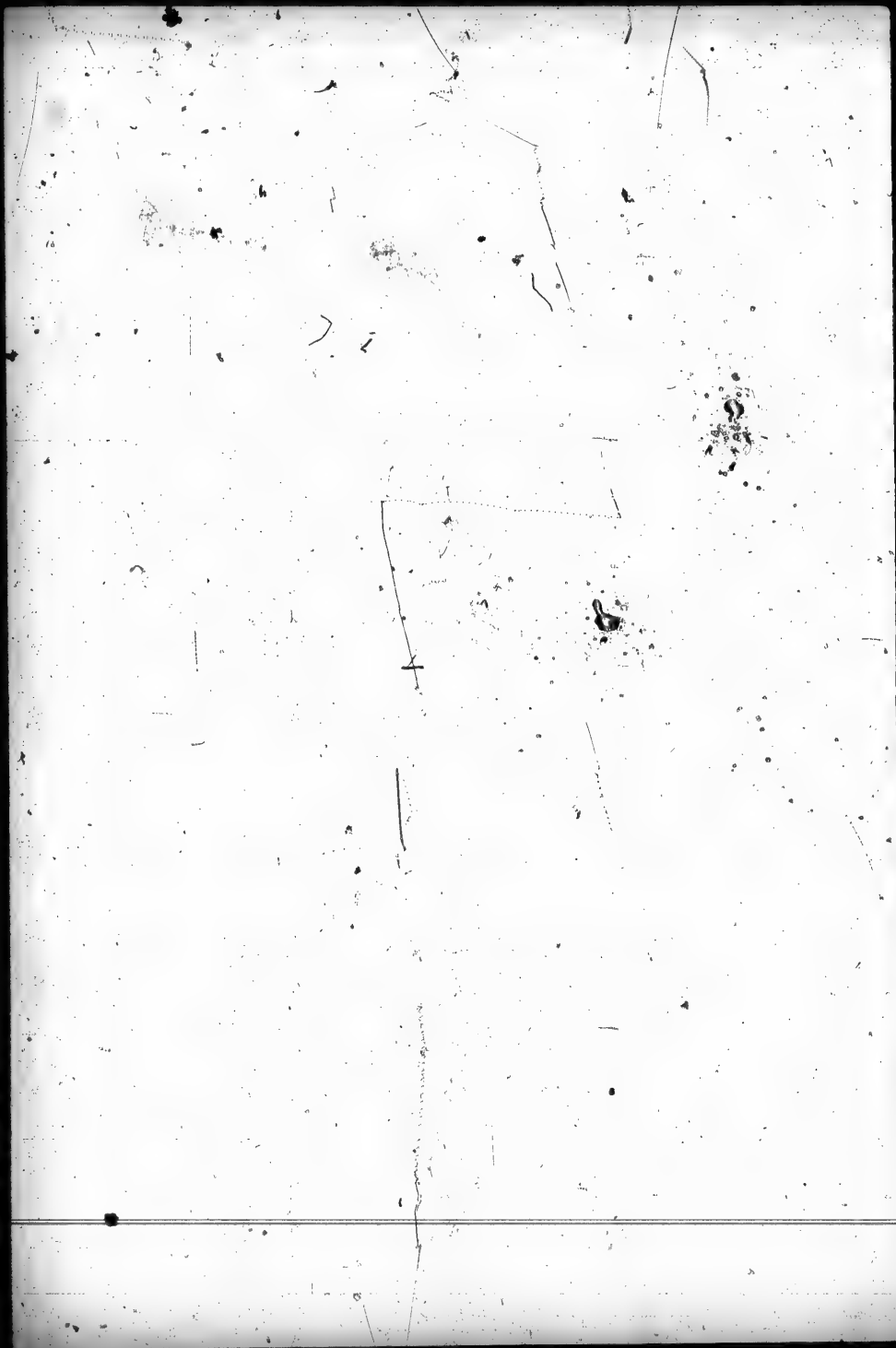
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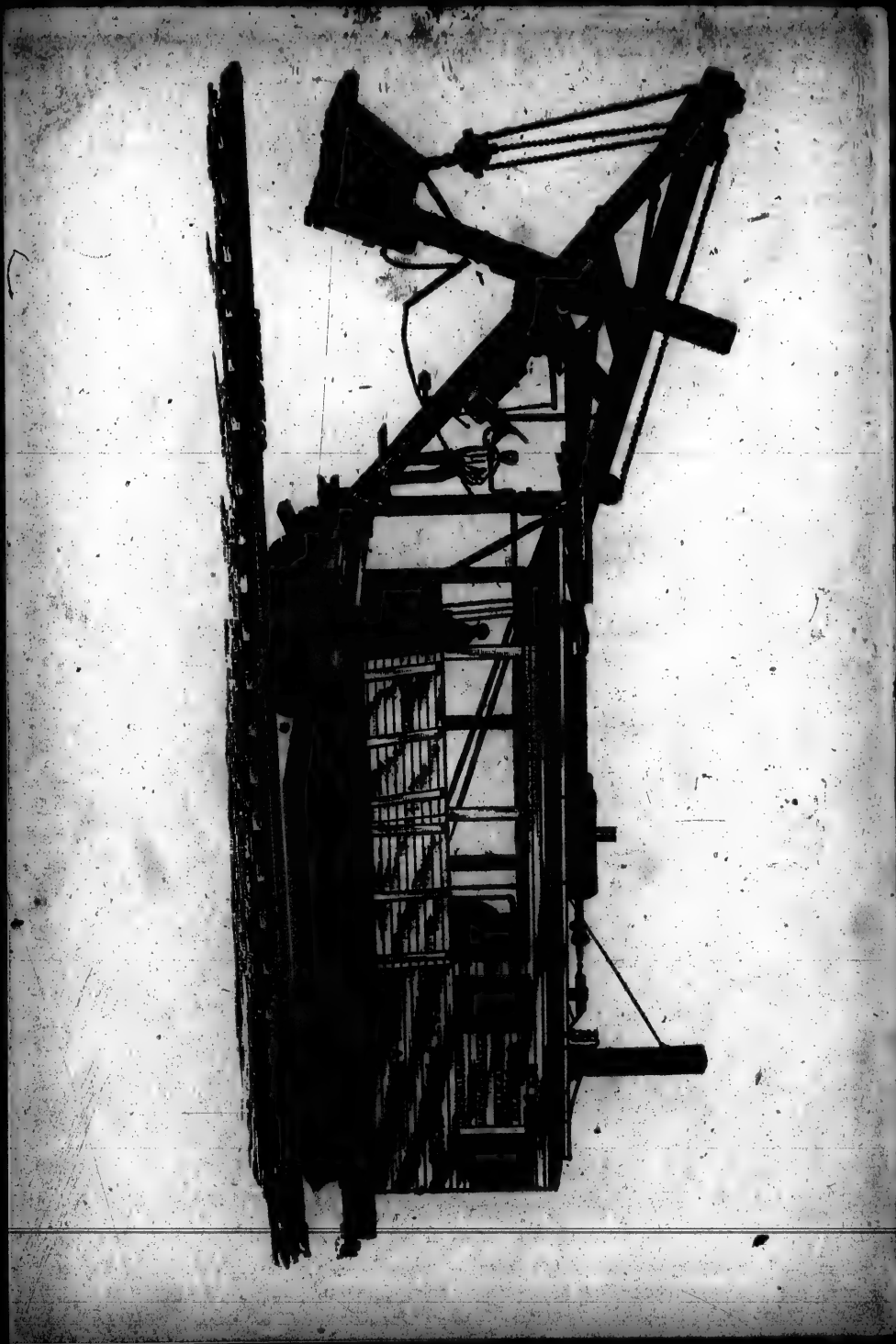
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WITH ONE FRICTION DRUM AND FOOT BRAKE.

Specially adapted for Factories, Docks, Warehouses, Ice Houses, Quarries, Mines, Inclines, &c.

THE above cut represents our Improved Friction Drum Belt Hoister, with Foot Brake and Pulley. It is designed to be driven by means of a Belt, Coupling or Gearing, where parties have their own power. It is a compact, substantial and serviceable machine, and is mounted on a strong iron bed plate. The Drum is the same as our Hoisting Engine Drums, and is operated in same manner. It has Foot Brake for lowering the load.

We only make one size of this machine: Drum 12 to 24 inches diameter, 23 inches long; Pulley 20 inches diameter, 6 1/2 inches face; proportion of gearing 13 to 60 teeth. Weight hoisted on single line 1500 to 5000 lbs.—100 to 200 feet per minute. Bed Plate 38x53 inches.

HOISTING MACHINES.

WITH ONE OR MORE PAIRS OF FRICTION DRUMS.

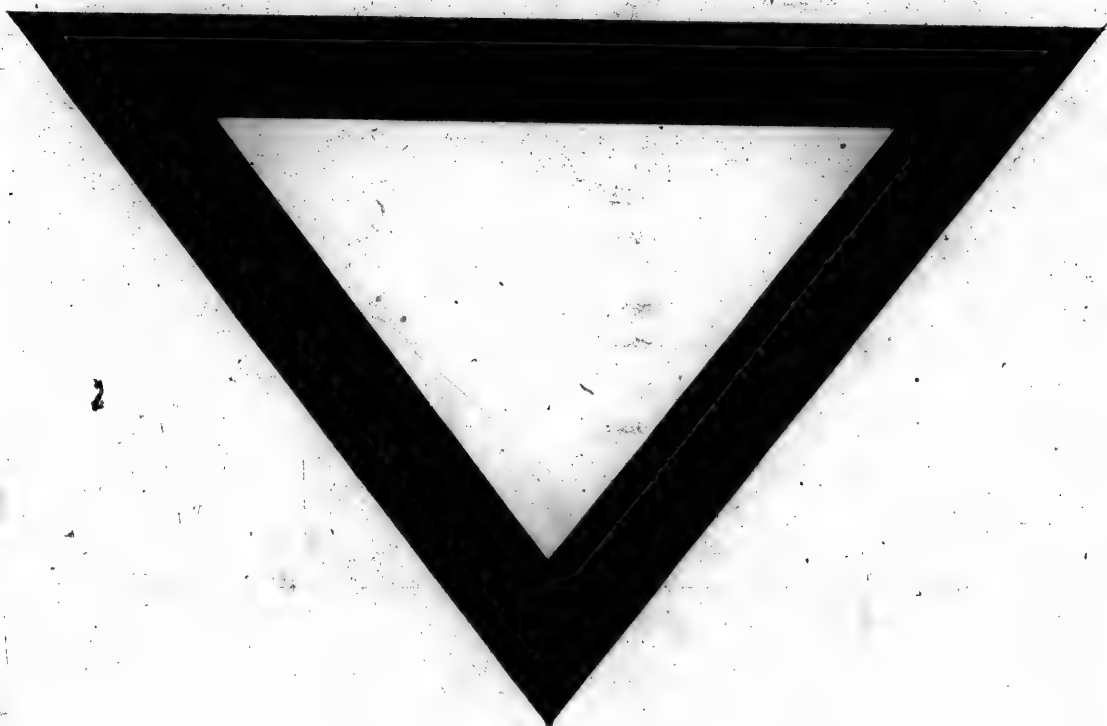
To be driven by gears, belt or coupling, from Stationary Engines or other power, for operating one or more Stone or other Derricks in Quarries, Stone Yards, Coal Docks, or on Large Buildings. We also arrange our

HOISTING ENGINES.

With two or more pairs of Friction Drums for the above uses.

Machinery for Engines in Quarries, Mines, Stone Yards, and other Special Duty.

Persons in want of any such Machinery will find it to their advantage to correspond with us before ordering.





ster,

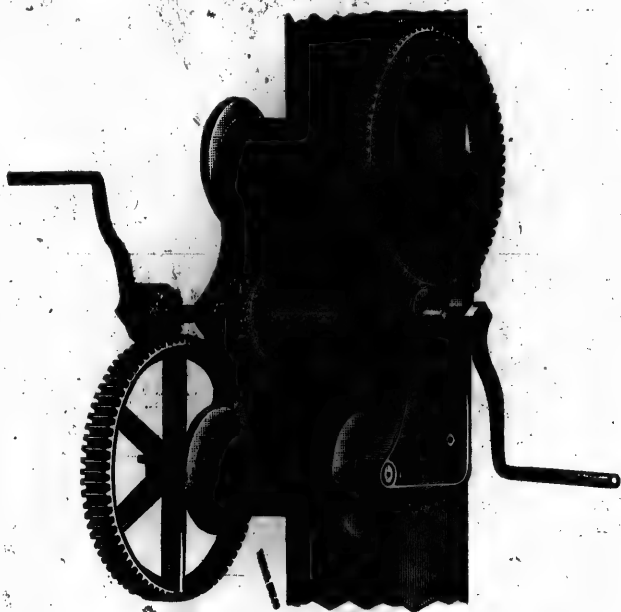
WINDING UP SLACK ROPE BY HAND.

and Canal Construction' Co.

stronger, more compact and convenient. The crank
all the levers, thus enabling the driver to operate the
or, and thus get it into position quicker. A horse can
or being raised, or can raise the weight and lower the
actly where he wants it. The brake belt on both
as the iron seat lined, so that a boy can easily lower a
n with the Hoistery, instead of six or eight men, the
while cutting or loading them, it gives the quarryman
both grooved for wire rope.

efinite; on single block, 10,000 lbs. 8 feet per minute,
15 in. long. Estimated shipping weight, 3800 lbs.

DIMENSIONS, CAPACITY, &c.—Weight hoist
Gear'd 20 to 25; Hoisting drum 14 in. diameter, 18



Derrick Hand-Power.

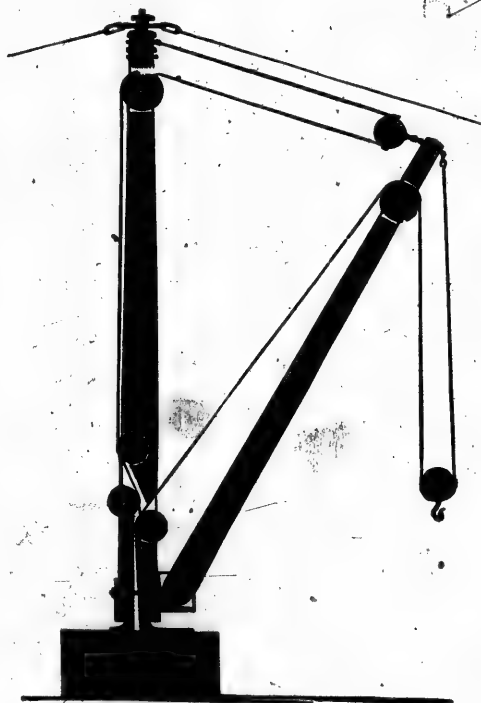
THIS represents our Double Drum, Double Geared Hand-Power attached to a Derrick. It is constructed with iron cheeks so that it can be bolted to a derrick mast sixteen inches wide or under. The upper drum is to hoist the load, the lower drum to raise or lower the boom; dogs are provided to keep the load or boom in position while the crank shaft is changed from one gear to the other, and to hold the boom or load in any position required. For the brake to be used in lowering use manilla rope, about one inch in diameter, three or four times around crank shaft—fasten the one end of rope by a staple to the mast; it can be used either single or double geared by changing the cranks from one shaft to the other. Proportion of gears: first pair, 75 to 15 cogs; second pair, 36 to 15 cogs. The Drums are plain, 18 inches in diameter, 15 inches long between flanges.

Dimensions with gears on and cranks off, 4 ft. 6 in. high, 2 ft. 10 in. wide.

Weight hoisted by two men on single line, with double gear, 1500 lbs.; with single gear, 700 lbs.

Weight, complete, 650 lbs.

Stone Derrick Irons.



Sectional View of Derrick,
SHOWING POSITION TO PLACE SHEAVES, &c.



FIG. 1.
Maat and Boom Shoe for
Bottom of Mast and Boom.



FIG. 2.
Step with one Sheave for
Single Drum H. P. Hoister
or Single Drum Engine.



FIG. 3.
Step with two Sheaves for
Double Drum H. P. Hoister



FIG. 6.
Iron Sheaves for Wire
Rope.

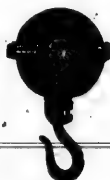


FIG. 5.
Wrought Iron Sheave
Block.



FIG. 4.
Step with two Sheaves for
Double Drum Engine.

Stone Derrick Irons Continued.



FIG. 7.
Wrought Iron Gudgeon for Top of Mast.



FIG. 9.
Plain Flat Band for Top of Mast.



FIG. 11.
Two Links with Sheave and Pin for point of Boom to take Boom Rope instead of Sheave Block, for use with Fig. 13 Band or Fig. 15 Socket.



FIG. 13.
Band and Bolt for end of Boom to use with Fig. 11 Sheaves and Links and Fig. 12 Clevis.



FIG. 15.
Socket for end of Boom, with Sheave.



FIG. 8.
Guy Cap for Top of Mast.



FIG. 10.
Flat Band for Top of Mast with one link for end of Boom Rope.



FIG. 12.
Clevis for end Boom to take end of Hoisting Rope.



FIG. 14.
Band with two Links for end of Boom.



FIG. 16.
Socket for Top of Mast.



FIG. 17.
Strap for Top and Bottom of Leg.



FIG. 18.
Clamp with Bolts for Wire Rope.

Price List of Derrick Irons.

(Cancel all Former Lists. Prices Subject to Change Without Notice.)

No. 1 Mast and Boom Shoe for 15 inch to 18 inch Mast	\$16 00
No. 2 " " " 12 inch to 14 inch Mast	12 50
No. 3 " " " 9 inch to 11 inch Mast	9 00
No. 1 Step with 2 14 inch Sheaves for Double Drum H. P. Hoister	15 00
No. 2 " " 2 14 inch " " " " " "	11 50
No. 3 " " 2 12 inch " " " " " "	9 00
No. 1 Step with 2 14 inch Sheaves for Double Drum Hoisting Engine	14 00
No. 2 " " 2 14 inch " " " " " "	10 50
No. 3 " " 2 12 inch " " " " " "	8 50
No. 1 Step with 1 14 inch Sheave for Single Drum H. P. Hoister or Hoisting Engine	12 00
No. 2 " " 1 14 inch " " " " " "	8 50
No. 3 " " 1 12 inch " " " " " "	7 00
No. 1 Guy Cap for top of Mast, with 8 Guy Links	8 00
No. 2 " " " " 6 " "	7 00
No. 3 " " " " 6 " "	6 00
No. 1 Wrought Iron Gudgeon for top of Mast, 3½ inches in diameter	5 50
No. 2 " " " " 3 inches " "	4 50
No. 3 " " " " 2½ inches " "	3 50
Plain Flat Band for top of Mast, 14 inches in diameter	2 25
" " " " 11 inches " "	1 75
" " " " 9 inches " "	1 50
Flat Band for top of Mast, 14 inches diameter, with 1 Link	2 75
" " " " 11 inches " "	2 25
" " " " 9 inches " "	2 00
No. 2 Cast Iron Socket for top of 14 in. Mast, with 3 in. Wrought Iron Gudgeon	9 00
No. 3 " " " " 11 in. " 2½ in. " "	6 50
No. 2 Cast Iron Socket for point of Boom, with 1 14-inch Sheave	12 00
No. 3 " " " " " 1 14-inch Sheave	8 00
Round Band for point of Boom, 12 inches diameter, with 2 Links	3 50
" " " " 10 inches diameter, with 2 Links	2 75
" " " " 8 inches diameter, with 2 Links	2 00
Flat Band for point of Boom, 12 inches diameter, with 1 Bolt	4 00
" " " " 10 inches diameter, with 1 Bolt	3 00
" " " " 8 inches diameter, with 1 Bolt	2 00
2 Links for point of Boom, with 14 inch Sheave and Pin	5 00
Clevis for point of Boom	1 25
No. 1 Wrought Iron Block, with 14 inch Sheave, 2 inch Hook	9 00
No. 2 " " " 14 inch " 1½ inch Hook	8 00
No. 3 " " " 12 inch " 1½ inch Hook	7 00
No. 1 Wrought Iron Straps for Top of Leg, 6 in. by 1½ in., with bolts, per pair	18 00
No. 2 " " " " 5 in. by 1½ in., " "	15 00
No. 3 " " " " 4 in. by 1½ in., " "	10 00
No. 1 Wrought Iron Straps for Bottom of Leg, 6 in. by 1 in., with bolts, per pair	11 00
No. 2 " " " " 5 in. by 1 in., " "	8 50
No. 3 " " " " 4 in. by 1 in., " "	6 00
Sheaves for Wire Rope, 6 in. dia., 80c; 8 in. dia., \$1.00; 10 in. dia., \$1.25; 12 in. dia., \$1.50; 14 in. dia., \$1.75; 16 in. dia., \$2; 20 in. dia., \$3.00.	
Steel Sheave Pins, with Key, 1½ dia., up to 6 in. long, 50c; 7 in. to 10 in., 40c; 11 in. to 16 in., 50c.	
Strap with Pin and Spike for Sheave to lead Boom Rope on D. D. H. P. Hoisters, \$1.25	
Clamps, with Bolts for Wire Rope, ½ in. dia., 40c; ¾ in. dia., 50c; 1 in. dia., 60c; 1 in. dia., 75c; 1½ in. diameter, 90c.	

Homogeneous Steel Galvanized Wire Ropes

FOR SHIPS' RIGGING AND GUYS FOR DERRICKS.

With 6 Strands of 7 Wires each—Hemp Centre.

Circumference in inches.	Diameter in Inches.	Breaking strain in tons of 2000 lbs.	Circumference of Hemp Rope of equal strength.	Weight per fathom in lbs.	Price per pound in cents.
1 1/2	1/2	4	3	2	15
2	5/8	7	4	3 1/2	12
2 1/4	3/4	8 1/2	4 1/2	4 1/4	11
2 3/4	7/8	12 1/2	5 1/2	6 3/4	10
3	1	16	6 1/2	8	10
3 3/8	1 1/8	20	7 1/2	10 3/4	9 1/2
3 3/4	1 1/4	25	8 1/2	12	9 1/2
4 1/4	1 3/8	30	10 1/2	16	9 1/2
4 1/2	1 1/2	36	11	18	9 1/2

Galvanized Wire Rope should never be used for Running Rope.

These Ropes are suitable for Ships' Rigging, Stays, Standing Ropes, Guys, etc., etc.

An advance of 10 per cent. will be charged for these Ropes if ordered with Wire Centres.

Galvanized Iron same price as Steel Wire Ropes.

CRUCIBLE CAST-STEEL

Standard Hoisting Ropes,

With 6 Strands of 19 Wires each—Hemp Centres.

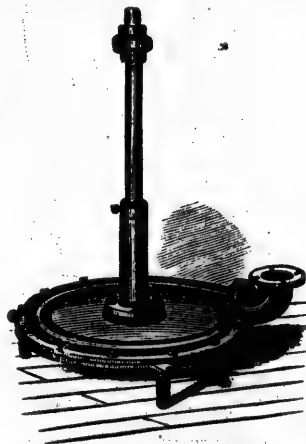
Circumference in inches.	Diameter in inches.	Breaking strain in tons of 2000 lbs.	Proper working load in tons of 2000 lbs.	Average weight per foot.	Circumference of hemp rope of equal strength.	Price per foot in cents.
1 1/2	1/2	6	1 1/4	.39	4 1/2	15
2	5/8	12	2 1/4	.63	5 1/4	18
2 1/4	3/4	18	3 1/2	.90	6 1/2	21
2 3/4	7/8	23	4 3/4	.99	8	27
3	1	29	5 3/4	1.38	9 1/4	34

N. B.—An advance of 10 per cent. will be charged for these Ropes if ordered with Wire Centres.

The weight of Ropes with Wire Centres is 10 per cent. more than that of Ropes with Hemp Centres.

Centrifugal Pumps.

THE principle on which the CENTRIFUGAL PUMP operates is too well known to need any particular explanation. The simplicity of pumps which act on the Centrifugal principle makes them the most efficient and durable of all pumps, the wear being very slight as compared with plunger pumps, and the cost is very much less for the same capacity, which is the reason of their being used in so many Tanneries, Paper Mills, Pulp Mills, Breweries, Distilleries, and by Contractors for draining Lock Pits, Coffer Dams, Sewers, emptying Dry Docks, Irrigating, Wrecking, Fire Purposes, and various other uses—being in constant use in many of these from five to ten years without wanting any repairs. We use the Hollow Arm Wheel in all pumps for raising water or any liquids not having stringy substances in it. The Concave Arm Wheel we use for pumping "half stuff" in Paper Mills, or any such material which is liable to clog.

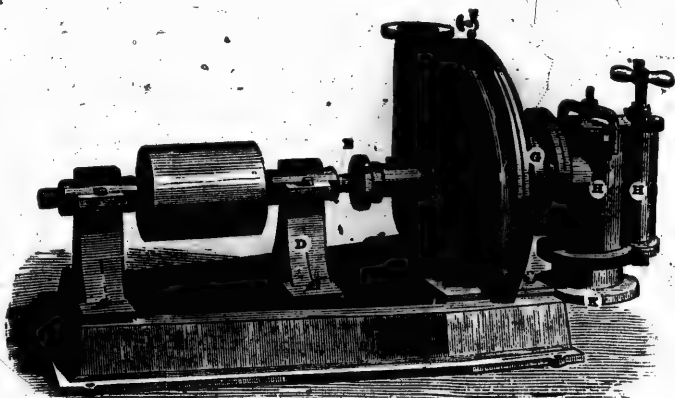


The Vertical Pump

Is intended to stand on the bottom of the tank, tub, well or reservoir, as the case may be, or it can be fastened at any required distance from the bottom; the only essential point being, that the pump should be constantly immersed in the fluid to be raised. For draining lock pits, coffer dams, tan vats, etc., in short for any situation in which large quantities of very foul water containing mud, sand, gravel, bark, etc., are to be raised expeditiously and cheaply, we consider our VERTICAL PUMP unequalled by any other with which we are acquainted. It is always ready for action, and rarely or never gets out of order. It can hardly break, or wear out, or clog. It raises enormous quantities of fluid with comparatively little power, and is the admiration of all who see it work. The shaft in Pumps is from 3 to 4 feet long. We furnish one coupling, one elbow and the pulley, with each pump.

Directions for Setting up Vertical Pumps.

In putting down be careful to have a perfect bearing for each leg, and see that the shaft turns easily; put the pulley on the upright shaft, and near it a guide pulley, under or over the belt as the case may require, and make a quarter twist in the belt when you drive from a horizontal shaft. It makes no difference which way the driving shaft runs, as the twist of the belt may be changed to correspond.



The Horizontal Pump,

RIGHT HAND, WITH SUCTION PRIMER ATTACHED.

IT is frequently desirable to use our Pump as shown above. It is as though a "Vertical" Pump was turned over on its side, the shaft then being horizontal—the circumstance which gives the pump its distinguishing name.

In point of execution there is no important difference between the Horizontal and the Vertical Pump. The former has the advantage of being more readily examined in case of accident.

In using the Horizontal Pump it is necessary that the Pump should be full of water before it will start. If the water is taken from a tank or flume level with the Pump the water should stand in them as high as top of the Pump; if the water is to be taken from a point below the Pump there must be a Foot Valve at the bottom of the suction pipe, to hold it and the Pump full of water, which must be put in, either at the discharge opening with pails, or by means of a Suction Primer H H, as shown above attached to Pump. The part shown at the extreme right is a small lift-pump, worked by hand, and used only in charging the main pump before starting; the pet-cock (shown on top of shell) is opened and the Primer is worked until no more air is driven out of it. When the Pump is evidently full (and not before) the pet-cock is closed, and the main Pump is then ready to be started. The Pump may be emptied by withdrawing the screws near the bottom of Primer and shell of Pump. This should always be done when the Pump is liable to freeze up overnight.

The Primer is finished ready to attach the suction pipe at K. All our Primers have rubber valves.

It is essential that the stuffing-boxes, at E, and the top of Primer and all joints should be well packed and *air-tight*. Candle-wicking moistened with oil is the best for the stuffing-boxes.

The suction-pipe may run horizontally, or bend in any direction to suit the location of the fluid to be raised. It should not, however, descend towards the Pump, which should be higher than any part of the suction-pipe. The amount of elevation (as a basis of speed) should be reckoned from the *bottom* of suction-pipe to the *top* of discharge pipe. The Suction-pipe should be larger than discharge pipe so as to make less friction on water, and thus take less power or throw more water with same power; short bends increase friction and should be avoided as much as possible; can use suction pipe same size as discharge but it will not give as good results.

Directions for Setting up Horizontal Pumps.

Great care should be used when setting up the Pump to give the suction-pipe firm and reliable support, other than its attachment to the Pump. A neglect of this indispensable precaution would be apt to produce a springing or twisting (or even cracking) of the suction side of the Pump shell, by either of which the working of the pump would be materially interfered with or stopped. The joints in the suction-pipe must be *air-tight* or Pump will not work well, if it does at all; therefore see that a *support amply sufficient* to sustain the weight of the suction-pipe and its contained fluid be given to the pipe, entirely distinct from the pump itself. A good way to do this is to place a firm support under the flange of pipe where it connects on to the bottom of Primer.

Can the Speed be Diminished?

Our Pumps are designed to raise, not as *little*, but as *much* as possible, and is therefore not offered to raise *small* quantities of water. The table gives the height to which a Pump of specified size, with a certain number of revolutions, will raise a certain quantity of water. Now it is important to know that a *very slight* diminution of speed would result in a considerable reduction of the amount raised *to that height*, and (what is of still greater consequence) a reduction of speed, of sufficient extent to effect an appreciable saving of power, would most likely *cut off the delivery entirely*, at that point. Diminishing the size of stream will not cause it to rise higher, nor will half the speed send a stream half the size to the same point.

S.

Foot
Valve.

6 00
8 00
10 00
12 00

ing to

est.
00.

3.
7.9
9.
8.
6.9
2.
7.
0.
6.
5.5

Revo-

00 ft.

1865
1405
353
240
085
880
695
655
480
395



0



